



ORIGINAL

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SPONTANEOUS INTRACEREBRAL HEMORRHAGE; OUTCOME OF SURGICAL TREATMENT

DR. MUHAMMAD ARSHAD FCPS
Assistant Professor of Neurosurgery

DR. MUHAMMAD YASIN FCPS
Associate Professor of Neurosurgery

**DR. MUHAMMAD ZAFAR IQBAL
FCPS, FRCS**
Assistant Professor of Neurosurgery

Department of Neurosurgery
Quaid-e-Azam Medical College
Bahawalpur

ABSTRACT

Intracerebral hemorrhage is a condition in which there is bleeding within the brain parenchyma without trauma. The most common causes for this type of hemorrhage are hypertension, aneurysmal rupture, AVM rupture, coagulopathies and metabolic disorders etc. **OBJECTIVES:** The aim of this study was to find out the out come of surgical treatment in cases of spontaneous intracerebral hemorrhage especially due to hypertension and metabolic disorders. **SETTING:** Department of Neurosurgery Quaid-e-Azam Medical College/ Bahawal Victoria Hospital Bahawalpur. **PERIOD:** June 1998 to May 2000. **PATIENTS & METHODS:** Detailed history and examination was followed by plain CT scan of brain. Most of these patients with hemorrhagic strokes were initially admitted in Medical ward of the same hospital and from there they were shifted to Neurosurgery ward after initial work up and CT scanning. In majority i.e. 25 (75%) of these patients the cause of hemorrhage was hypertension. The second most common cause in 6 (18%) patients for hemorrhage was metabolic disorder especially renal and liver malfunction. **RESULTS:** Total number of the patients were 33. Out of which 23 were males and 10 females. Mean age was 55 years (ranging from 22 to 80 years). Sudden headache followed by loss of consciousness, loss of speech and hemiplegia or hemiparesis were the commonest presenting complaints. Most of the haematoma (75%) were found to be on left side of brain with focal neurological deficits on right side along with aphasia or dysphasia. Common sites for hemorrhage were basal ganglia, internal capsule and thalamic regions of the brain 25 (75%). A few 3 (9%) of these clots were found in the cerebellum. After investigations and initial resuscitation, various procedures performed were, burr hole aspiration 3 (9.3%), craniectomy 5 (15.3%) and craniotomy 25 (75%). In 25 patients, free flap craniotomy was done with craniotome to remove the clot. 20 (60%) out of 33 patients improved regarding their hemiparesis and dysphasia. 5 (15%) patients expired even after surgery. 8 (24%) patients remained in the same status as were before surgery. Patients with GCS 5 or above with sizeable focal clot, were subjected to surgery. Patients with GCS below 5, deeply comatosed, with extensor response or no response to painful stimuli and with blood in the ventricular system were excluded from the study. **CONCLUSION:** Surgery is a good option, though controversial for the treatment of ICH. It gives satisfactory results when a patient is young, without any other illness and with good GCS score i.e. more than 8. Its prognosis is bad in older patients other systemic disease or any metabolic problem along with low GCS score i.e. below 8. There are controversies in decision making patients with ICH operate or not to operate.

INTRODUCTION

Bleeding into the brain parenchyma without accompanying trauma is known as spontaneous

intracerebral hemorrhage. It accounts for 10-17% of all strokes. Mortality is considerably higher than that for non hemorrhagic or Ischaemic strokes¹. Most important causes for hemorrhagic strokes are depicted in table-I.

Table-I. Causes of hemorrhagic strokes.

Causes	%age
Hypertension	40-60%
Aneurysms	20%
Arteriovenous malformations	4-7%
Coagulopathies	5-7%
Tumours	1-11%
Miscellaneous causes e.g. hemorrhagic infarcts, Cerebral amyloid angiopathy and drug reactions	9-15%

80% of intracerebral hemorrhage occurs within the cerebral hemispheres. 20% hemorrhages are infratentorial. Hypertensive bleeds occur in deep gray matter (65%), pons (11%), Cerebellum (8%) whereas bleeds associated with other disorders are likely to be located in the sub cortical white matter (45%), deep gray matter (36%), pons (10%) and cerebellum (3%)¹.

MATERIAL & METHODS

Thirty three patients with spontaneous ICH were admitted and treated surgically in the department of neurosurgery, B. V. Hospital Bahawalpur during two years period from June 1998 to May 2000. About 1/3 of these patients were admitted directly from casualty department and outpatient of this hospital and remaining 2/3 were shifted from the other medical wards of the same hospital where they were admitted initially with the history of stroke.

Detailed history and physical examination was followed by urgent C. T scanning (plain) of the brain. Patients with good health, especially young and middle aged patients, with no other medical illness, with GCS 5 or above and with focal sizeable clot were subjected to surgical treatment. Patients with history of stroke (ICH) for more than 3-4 weeks were treated with burr hole aspiration of liquefied blood.

Patients with recent hemorrhage or haematoma of less

than 2 weeks were subjected to craniectomy or craniotomy for the removal of clot.

RESULTS

23 out of 33 patients were males and 10 females. Most of the patients were in the age range of 40-60 years (Table-II). Commonest presenting complaints were headache, vomiting, loss of consciousness, hemiplegia or hemiparesis and aphasia or dysphasia.

Table-II. Age incidence

Age range	No of patients
20-30	3
31-40	4
41-50	10
51-60	9
61-70	4
71-80	3

Table-III. Clinical presentation

Clinical features	No of Pts	%age	GCS
Headache, vomiting, loss of consciousness, right hemiplegia.	6	18	5
Loss of speech i.e. dysphasia or aphasia and right hemiplegia.	15	45	10
Left Hemiplegia.	8	24	13
Right Hemiparesis.	2	6	15
Left Hemiparesis.	2	6	15

Most of the haematomas were found on left side of brain and they were in basal ganglia and thalamic regions of brain. Burr hole aspiration of liquefied blood was done in 3 patients, craniectomy in 5 patients and craniotomy in 25 patients.

Average stay of these patients in the department of neurosurgery was 2-3 weeks. Out come was good in 20 patients, 8 patients remained in the same status as before surgery and 5 patients died even after surgery. So

the mortality in this study was found to be 15%.

Table-IV. Operative procedures

Procedure	No of pts	%age
Burr hole aspiration.	3	9.3%
Craniectomy.	5	15.3%
Craniotomy.	25	75.3%

Table-V. Stay in Hospital

Stay in weeks	No of patients
1-2	5
2-3	10
3-4	10
4-5	8

DISCUSSION

A proportion of strokes are due to intra cranial hemorrhage. Their characteristics and treatment are different from ischaemic strokes. Surgery is often necessary. Most intracerebral hemorrhages are hypertensive in origin².

Intracerebral haematoma accounts for 15% of strokes. Its mechanism includes, hypertension, cerebral amyloid angiopathy, rupture of vascular malformations, bleeding into primary or metastatic brain tumours, coagulopathies, sympathomimetic drug effect and vasculitis³.

In our study, the most common causes for the ICH were, hypertension, hepatic or renal dysfunction, use of anticoagulants and bleeding into the tumors. The mortality in intracerebral haematoma is dependent on the size and location of haematoma. A reliable clinical parameter for the prediction of outcome is Glasgow Coma Scale at presentation. The management of ICH involves (a) the prevention and treatment of increased intra cranial pressure and (b) the choice between surgical and non surgical treatment, a clinical decision that is still controversial³.

Primary intracerebral hemorrhage is due to sudden

rupture of a cerebral artery or its perforators. The nature of the vascular lesion leading to the rupture remains unknown, but it is known that hypertension plays a major role⁴.

Surgical intervention in supratentorial intracerebral haematoma is still controversial. The only effect of haematoma evacuation is to stop progressive deterioration rather to improve overall clinical outcome⁵. The choice of treatment in spontaneous intracerebral hemorrhage has always been controversial. Location and size of haematoma, shifting of midline structures and deterioration of consciousness should be regarded as indications of surgery.

The results of treatment are worsened by deep location of haematoma, especially in thalamus and brain stem regions, very big size, primary serious condition, old age of the patient and some metabolic diseases like liver dysfunction⁶. Spontaneous intracerebral hemorrhage can also occur within a tumor. The incidence of tumor hemorrhage was 2-7% in a study of Barth H et al. In most of the cases of hemorrhage, tumors responsible were, metastatic neoplasm and glioblastoma⁷.

Murshid et al treated three cases of spontaneous intracerebral haematoma by acute evacuation of the hemorrhage. All cases proved to have cerebral amyloid angiopathy as the primary cause of hemorrhage⁸.

Spontaneous intracerebral hemorrhage (ICH) refers to parenchymal hematoma not resulting from trauma and accounts for 8% to 13% of all strokes⁹. ICH is more common in males, blacks and the elderly, and is much more likely to result in death or major disability than cerebral infarction or SAH¹⁰. Although the diagnosis of ICH has greatly improved in the CT era, morbidity and mortality remain essentially unchanged.

Neither surgical nor medical treatment has been demonstrated to conclusively benefit patients, and clinical management of ICH varies greatly throughout the world¹¹⁻¹². In a study about spontaneous intracerebral hemorrhage, the background informations given by the authors are ;

- Intracerebral hemorrhage is a subtype of stroke that is fatal in approximately 50% of the cases.

- The incidence of intracerebral hemorrhage increases with age.
- The best documented treatable risk factor for this type of stroke is hypertension.
- Other modifiable risk factors include drug and alcohol abuse, the use of anticoagulants and the use of platelet inhibitors such as aspirin.
- It is not clear, however, whether the use of aspirin alone is a risk factor, or whether the risk is associated with other factors, such as the patient's age, hypertension, heavy alcohol use and how the dose of aspirin may influence the risk¹³.

Intracerebral hemorrhage classically presents with sudden onset of a focal neurological deficit progressing over minutes to hours, with accompanying headache, nausea, vomiting, decreased consciousness and elevated blood pressure⁹.

Hypertension and advanced age are the most important risk factors for ICH^{14,15}. ICH occurs slightly more frequently among men than woman, and is significantly more common among young and middle aged blacks than whites of similar ages¹⁶. Half of the all cases of ICH are due to the effects of chronic hypertension on intra cranial perforating arteries, usually resulting in hemorrhage in the basal ganglia.^{14,15,17,18,19}

Advanced age, in general, is a substantial risk factor for ICH, with the rate doubling with each decade of life until age 80, when ICH incidence plateaus at nearly 25 times that of the previous decade²⁰. The decision about whether and when to operate upon a patient of intracerebral hemorrhage remains somewhat controversial. Nonetheless, consensus recommendations based on the available literature have been given below⁹;

- Patients with small hemorrhage (<10 cm³) or minimal neurological deficit should be treated medically because they generally do well with medical treatment alone.
- Patients with a GCS score <4 should be treated

medically because they uniformly die or have extremely poor functional outcome that cannot be improved by surgery.

- Patients with cerebellar hemorrhage >3 cm in diameter who are neurologically deteriorating or who have brain stem compression and hydrocephalus from ventricular obstruction should have surgical removal of the hemorrhage as soon as possible.
- Young patients with large lobar hemorrhage >50 cm³ who deteriorate during observation often undergo surgical removal of the hemorrhage. However, the efficacy of this approach is supported by only one small endoscopic study²¹.

CONCLUSION

Conclusion drawn from this study is;

Surgery for intracerebral hematoma is only beneficial in patients, who are young, having no systemic illness, metabolically fit and with GCS score 8 or above.

It has good outcome if surgery can be delayed, because burr hole aspiration of liquefied hematoma gave satisfactory results regarding the improvement of neurological deficits than craniectomy or craniotomy as some damage to normal brain tissue is inevitable during these procedures for the removal of haematoma.

But young patients with large intracerebral haematoma with good flexion response to painful stimulus, metabolically fit and having clear chest and in whom there is risk of impending brain herniation, they must be operated upon in emergency to save their lives. Surgery in old patients, having other medical illness, metabolically unfit, with low GCS score below 8, met with bad consequences.

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CORRECTION

The amendment of the Professional Vol: 08, No. 3 (PROF-544) Page 317 is as under.

INCORRECT

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PROF-544

AZOOSPERMIA IN CLINICAL PRACTICE AT LARCENY

***Dr. Ghulam NADIR Kaheri**
Assistant Professor of Forensic Medicine and Toxicology

***Dr. Sher Mohammad Sheikh**
Professor of Pathology

***Dr. Muhammad Aziz**
Assistant Professor of Anatomy

***Dr. Haresh Chand**
Pathologist

***Dr. Sikandar Ali Sheikh**
Pathologist

*Chandka Medical College
LARCENY.

CORRECT

ORIGINAL

PROF-544

AZOOSPERMIA IN CLINICAL PRACTICE AT LARKANA

***Dr. Ghulam Qadir Kaheri**
Assistant Professor of Forensic Medicine and Toxicology

***Dr. Sher Mohammad Sheikh**
Professor of Pathology

***Dr. Muhammad Aziz**
Assistant Professor of Anatomy

***Dr. Haresh Chand**
Pathologist

***Dr. Sikandar Ali Sheikh**
Pathologist

*Chandka Medical College
LARKANA.